

Appl. No. 10/575,000

Atty Dkt. No. 112780-053

Response to Office Action mailed June 18, 2007

LISTING OF CLAIMS

This listing of claims replaces all prior versions and listings of claims in the patent application.

Claim 1 (currently amended): A travel vibration suppressing device disposed in ~~of a~~ working vehicle ~~vehicle~~, the travel vibration suppressing device absorbing a pressure pulsation generated in an actuator when the working vehicle is traveling, and comprising:

a hydraulic pump;

at least one actuator actuated by pressure oil discharged from the hydraulic pump;

an accumulator connected to one pressure chamber in the at least one actuator for absorbing a pressure pulsation generated in the pressure chamber;

a directional control valve for controlling a supply and a discharge of the pressure oil ~~supplied from the hydraulic pump~~ to the actuator; and

a ride control valve for switching a communicating state and a cutoff state ~~controlling a communication and a cutoff~~ between the accumulator and the pressure chamber,

~~wherein the ride control valve is arranged on the directional control valve in a laminated manner by an internal piping~~

wherein the ride control valve is constructed in a ride valve body,

the directional control valve is constructed in a bucket valve body,

the ride valve body is disposed on the bucket valve body in a laminated manner,

the ride control valve and the directional control valve are connected through an internal piping in the ride valve body and the bucket valve body,

the travel vibration suppressing device comprises a first pressure sensor for detecting a load pressure of the actuator, and

a communication opening area of the ride control valve which communicates between the

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accumulator and the pressure chamber is controlled on a basis of a detected signal from the first pressure sensor.

Claim 2 (cancelled).

Claim 3 (currently amended): The travel vibration suppressing device according to ~~claim~~
2 claim 1, comprising a second pressure sensor for detecting a pressure of an accumulator,
wherein

~~a second pressure sensor for detecting a pressure of an accumulator is arranged, and~~
a switching position of the ride control valve is controlled by a detected pressure of the
accumulator detected by the second pressure sensor and the load pressure of the actuator detected
by the first pressure sensor,

~~when a~~ when the detected pressure of the accumulator detected by the second pressure
sensor is higher than the load pressure of the actuator detected by the first pressure sensor, the
ride control valve is switched to a position where the accumulator is connected to a tank, and

when the detected pressure detected by the second pressure sensor becomes equivalent to
the load pressure of the actuator from a state in which the detected pressure detected by the
second pressure sensor is higher than the pressure detected by the first pressure sensor, the ride
control valve is switched to a position where the accumulator is communicated with the pressure
chamber ~~a ride control valve is controlled so as to reduce the pressure of the accumulator to the~~
~~load pressure of the actuator, and thereafter the accumulator is communicated with a pressure~~
~~chamber.~~

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Claim 4 (currently amended): The travel vibration suppressing device according to any one of ~~claims 1 and 2~~ claims 1 and 3, comprising a travel state detecting sensor for detecting a travel state of the working vehicle, wherein

the communication opening area is controlled by the detected signal from the first pressure sensor and/or the travel state detecting sensor, and

when an operation for increasing the communication opening area is performed, a valve of an upper limit of an area which can be increased as the communication opening area is controlled on a basis of a degree of the detected signal detected by the first pressure sensor and/or the travel state detecting sensor wherein the ride control valve is structured so as to freely change an upper limit opening area that is opened as a communication opening area.

Claim 5 (currently amended): The travel vibration suppressing device according to claim 4, when a increase of the load pressure of the actuator is detected by the first pressure sensor and/or when an increase of a traveling speed of the working vehicle is detected by the travel state detecting sensor, the valve of the upper limit is controlled to be small wherein a control for reducing the upper limit opening area is executed as a load pressure of an actuator becomes higher and/or as a traveling speed of a working vehicle becomes higher.

Claim 6 (currently amended): The travel vibration suppressing device according to claim 4, when a decrease of the load pressure of the actuator is detected by the first pressure sensor and/or when a decrease of a traveling speed of the working vehicle is detected by the travel state detecting sensor, the valve of the upper limit is controlled to be large wherein a control for expanding the upper limit opening area is executed as a load pressure of an actuator becomes lower and/or as a traveling speed of a working vehicle becomes lower.

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Claim 7 (cancelled).

Claim 8 (currently amended): The travel vibration suppressing device according to ~~any one of claims 1 and 2~~ claim 1, further comprising a speed increasing valve for ~~supplying for~~ increasing a supply amount of the pressure oil from the hydraulic pump to the ~~at least one~~ actuator, wherein the speed increasing valve is constructed in a speed increasing valve body, and the speed increasing valve and the ride control valve or the directional control valve are connected through the internal piping in each body and/or an external piping outside of each body arranged on the ride control valve or the directional control valve in a laminated manner by the internal piping and/or an external piping.

Claim 9 (new): A travel vibration suppressing device disposed in a working vehicle, the travel vibration suppressing device absorbing a pressure pulsation generated in an actuator when the working vehicle is traveling, and comprising;

a hydraulic pump;

at least one actuator actuated by pressure oil discharged from the hydraulic pump;

an accumulator connected to one pressure chamber in the at least one actuator for absorbing a pressure pulsation generated in the pressure chamber;

a directional control valve for controlling a supply and a discharge of the pressure oil to the actuator; and

a ride control valve for switching a communicating state and a cutoff state between the accumulator and the pressure chamber,

wherein the ride control valve is constructed in a ride valve body,

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the directional control valve is constructed in a bucket valve body,
the ride valve body is disposed on the bucket valve body in a laminated manner,
the ride control valve and the directional control valve are connected through an internal piping in the ride valve body and the bucket valve body,
the travel vibration suppressing device comprises a speed increasing valve for increasing a supply amount of the pressure oil from the hydraulic pump to the actuator,
the speed increasing valve is constructed in a speed increasing valve body,
the speed increasing valve is disposed on the ride valve body or the bucket valve body in a laminated manner, and
the speed increasing valve and the ride control valve or the directional control valve are connected through the internal piping in each body and/or an external piping outside of each body.